

Commonwealth of
Massachusetts
Executive Office of
Energy and
Environmental Affairs
Performance Report

January 22

2014

This document was prepared pursuant to Executive Order 540, Governor Patrick's directive to drive performance, accountability, and transparency across the Executive Branch on behalf of the citizens of the Commonwealth

Message from Secretary Richard K. Sullivan Jr.

Welcome to the first Performance Report of the Executive Office of Energy and Environmental Affairs (EEA), the first state Cabinet-level office in the nation that oversees both environmental and energy agencies. In putting energy and environment under one roof, Governor Deval Patrick set a course toward a clean energy future, and the six agencies under EEA are following that direction with vigor, in close collaboration with the Legislature and many outside partners.

The agencies and offices of EEA also preserve open space, species habitat, and working landscapes; enforce pollution laws to protect public health and natural resources; review the environmental impact of major real estate and infrastructure developments; enhance the state's role in energy conservation and production; manage fish and wildlife; and provide opportunities for outdoor recreation and access at the parks, beaches, and farms that make Massachusetts such a wonderful place to live, work, and play.

Explore this document to discover what the EEA agencies are doing to steward our precious natural resources and create a cleaner, healthier, and more beautiful Commonwealth for residents and visitors alike – and take advantage of all that Massachusetts has to offer.

Background

On April 11, 2007, Governor Deval Patrick's Cabinet reorganization took effect, creating the Executive Office of Energy and Environmental Affairs and adding to the Executive Office the Commonwealth's two energy-related agencies: the Department of Public Utilities and the Division (now Department) of Energy Resources. Our commitment to protecting our environment now recognizes the importance of energy efficiency; making renewable energy a reality in our state, and reducing our dependence on fossil fuels; diversifying our energy sources; and leading the country in energy technology innovation.

Secretary Richard K. Sullivan Jr. oversees the Commonwealth's six environmental, natural resource and energy regulatory agencies: the Departments of Agricultural Resources; Conservation and Recreation; Energy Resources; Environmental Protection; Fish and Game; and Public Utilities.

Within the Secretariat are a number of offices, including: Massachusetts Environmental Policy Act Office (MEPA), Massachusetts Office of Coastal Zone Management (CZM), Office of Law Enforcement (Environmental Police), the Office of Technical Assistance, and the Division of Conservation Services.

The Secretary of EEA also serves as chair of the board of two related public authorities: the Massachusetts Water Resources Authority (MWRA) and the Massachusetts Clean Energy Center (CEC).

This document should be read alongside the EEA Strategic Plan 2013-2015. You can also use the state's Program Budget Dashboard (online at mass.gov) to understand more about the work, performance measures, and funding of EEA and its agencies.

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Mission

The Executive Office of Energy and Environmental Affairs develops and executes policies on behalf of the residents of the Commonwealth that balance sustainable economic growth, quality of life, and resource protection, in order to ensure that Massachusetts is a great place to live, work, learn, and play for generations to come.

(EEA's statutory mission can be found in Massachusetts General Laws, Chapter 21A, Section 2)

Vision

A Commonwealth that continues to lead the nation in energy and environmental affairs, as demonstrated by:

- Reliable, clean, and cost-effective energy
- More of our energy expenditures are invested in the state; and energy efficiency is our first fuel
- A world-leading clean energy sector
- Ease of doing business
- Thriving fishing, agricultural, and forestry industries
- Natural environment with diverse wildlife resources for all to enjoy
- Air, ground, and water quality that enhance public health
- Low greenhouse gas emissions
- Abundant, affordable, and superior quality local food, agriculture, and fishery products

Values

It is important to note that in all that we do, whether a strategic priority or a basic element of our mission, we strive to demonstrate our core values of civility, professionalism, courtesy, and respect in all interactions with fellow staff members, stakeholders, and the public.

Strategic Themes and Measureable Goals

In the EEA Strategic Plan 2013-2015 published in January 2013, we outlined three broad themes that unified our environmental and energy agencies. They are listed below along with their associated measureable goals:

- Sustainable economic development
- Quality of life
- Resource protection

Sustainable economic development – measureable goals

- Conduct permitting efficiently and responsively
- Plan, regulate, and invest consistent with the Massachusetts Sustainable Development Principles
- Promote the development of an innovative clean energy and efficient energy resources sector in Massachusetts
- Support the Commonwealth’s legacy, resource-based industries (i.e., commercial fishing, farming, and forestry)

Quality of life – measureable goals

- Protect public health by ensuring healthy air, safe drinking water, and low exposure to contaminants
- Improve access to and quality of outdoor recreational opportunities
- Increase the public’s access to locally-grown food, agriculture, wood, and fisheries products
- Enhance access to reliable, efficient, clean, and cost-effective energy resources within a framework where Massachusetts serves as a national leader in renewable and clean resource development

Resource protection – measureable goals

- Reduce greenhouse gas emissions 25% below 1990 levels by 2020, and at least 80% below 1990 levels by 2050
- Conserve open space and working landscapes for current and future generations to provide clean air, clean water, and wildlife habitat
- Manage fresh water and ocean resources in a sustainable manner

In July 2013 Governor Patrick outlined EEA’s key priorities for the remainder of his term. They were:

- Water innovation
- New solar goal of 1.6 gigawatts; and
- Climate change adaptation

These priorities integrate well into the themes and measureable goals we have previously described, with the exception of water innovation, for which we have created a new goal: Promote the development of the water innovation sector. Developing a water innovation economy is similar to our efforts to become a hub of the clean energy sector. We will report further progress on water innovation in our next performance report.

Update on Selected Actions

Theme 1: Sustainable Economic Development

Goal: Conduct permitting efficiently and responsively:

Action: Massachusetts Department of Environmental Protection (MassDEP) Streamlining and Regulatory Reform report

In 2007, Governor Patrick directed MassDEP to speed up and simplify its permitting process to match "the speed of business." In response, the Department initiated a permit streamlining program in 2007 that cut review timelines across the board and simplified the approval process for key permits associated with significant economic development opportunities. Overall, MassDEP has reduced permitting timelines by 20 percent since 2007, with 90 percent of DEP permits now being issued within three months, compared to only 69 percent before 2007. Ninety-seven percent of permits are issued within six months, compared to 81 percent before 2007.

Additionally, there is a package of more than 20 additional reforms proposed by MassDEP, in coordination with business, municipal and environmental stakeholders, to weed out unnecessary or obsolete regulations, further lightening the regulatory burden on businesses and helping promote job growth. The package of reforms will further streamline environmental permitting requirements and eliminate state permits that are of low environmental protection value or that duplicate local approvals.

MassDEP's efforts are part of Governor Patrick's nation-leading regulatory reform effort. This is the most significant and impactful reform of the regulatory system in Massachusetts in decades. Through September 2012, 60 state agencies had reviewed 446 sets of regulations with 286 of those regulations being amended or eliminated. Nearly two-thirds of all of the regulations reviewed have had some action taken. The goal of making it easier to do business in Massachusetts is one of the five main goals of the Commonwealth's long-term economic development plan, "Choosing to Compete in the 21st Century."

Goal: Plan, regulate, and invest consistent with the Massachusetts Sustainable Development Principles

Action: South Coast Rail Project

The South Coast Rail Economic Development and Land Use Corridor Plan, developed in 2009, has made strategic investments to assist the 31 corridor communities in preparing for passenger rail through sustainable development and appropriate land use. The Plan identifies areas that are appropriate for new development near proposed South Coast Rail transit stations. The fifth round of technical assistance announced in October 2012 provided grants to 15 Corridor communities of \$5,000 - \$25,000 to plan for sustainable, smart growth; a sixth round will be announced shortly.

The Patrick Administration has continuously supported the transportation infrastructure on the South Coast including the Accelerated Bridge Program “mega” project to rebuild the I-195, Route 79 and Route 138 interchange in Fall River along with improvements to Route 18 and other state roadways, and local road and bridge projects funded by Chapter 90. The Patrick Administration has made 245 investments totaling \$939 million in the region, including \$11.7 million in 2011 and 2012 MassWorks infrastructure program grants to five communities in the region, among them a grant of \$3.25 million to New Bedford for improvements in the city’s Acushnet Avenue International Marketplace area.

Goal: Promote the development of an innovative clean energy and efficient energy resources sector in Massachusetts

Action: Growth of Clean Energy sector

Clean energy jobs in Massachusetts grew by 11.8 percent between June 2012 and June 2013, the second year of double digit growth. Over the past two years, clean energy jobs have grown by 24.4 percent with 5,557 clean energy companies now employing 79,994 workers across the Commonwealth.

“Building a clean energy future is central to our growth strategy, and another year of double digit job growth is proof that our strategy is working,” said Governor Patrick. “We pursue our clean energy agenda because we cannot leave our future to chance. Our clean energy industry is putting thousands of our residents to work in every corner of the Commonwealth, catalyzing economic development and creating a healthier Massachusetts for the next generation.”

The job growth over the past year is eight times faster than the overall three percent growth rate among all industries combined in the Commonwealth over the same period.

All four geographic regions of the state saw an increase in clean energy employment over the past 12 months. The South Coast experienced the most growth, with jobs increasing 14.3 percent from 2012 to 2013.

“Massachusetts has become a premier destination for clean energy innovation and investment because we are shaping that future rather than just waiting for it to happen,” said Governor Deval Patrick. “There is more to do, and now is no time to let up. In order to be winners in the 21st century, we must increase the pace of innovation and deepen our commitment to being good stewards of both our environment and our economy.”

Goal: Support the Commonwealth's legacy industries (commercial fishing, farming, forestry):

Action: Small Business Administration (SBA) loans for commercial fishermen

The Patrick Administration has expanded the loan opportunities for commercial fishermen from the Commonwealth's Commercial Fisheries Revolving Loan Fund (RLF). The RLF was expanded after months of collaboration and conversation with project partners and local fishermen. The U.S. Secretary of Commerce declared a disaster in the Northeast Groundfish Fishery in September 2012. The Patrick Administration continues to work with Massachusetts' congressional delegation to get much needed financial assistance to the Commonwealth's fishermen and their families – the bipartisan federal budget agreement for FFY14 passed as recently as mid-January of 2014 has, for the first time appropriated, federal relief funds for the northeast region's fisheries.

The Administration's application for an Economic Injury Disaster Loan declaration by the U.S. Small Business Administration was approved, making Massachusetts fishermen eligible for Economic Injury Disaster Loans (EIDL). EIDLs are working capital loans that help small businesses meet their ordinary and necessary financial obligations that cannot be met as a direct result of a disaster. Governor Patrick brought representatives from across the administration together to compile resources for fishermen and their families.

The Department of Fish & Game (DFG) and its Division of Marine Fisheries (DMF), working with their federal partner National Oceanic and Atmospheric Administration (NOAA) Fisheries, have expanded eligibility for use of the Commonwealth's Commercial Fisheries Revolving Loan Fund by groundfishermen to include vessel repairs, gear upgrades, monitoring costs and refinancing of existing fisheries-related debt. Qualified groundfishermen are able to add these financing opportunities to the existing ability to lease groundfish quota through the RLF.

Action: Helping farmers improve operations

Governor Deval Patrick and Lieutenant Governor Timothy Murray, along with Energy and Environmental Affairs Secretary Rick Sullivan, awarded grants totaling \$700,000 to 11 projects that will help farmers improve their farm operations. Awarded through the Massachusetts Department of Agricultural Resources' (DAR) Agricultural Preservation Restriction (APR) Improvement Program (AIP), grants went to farms in the communities of Cummington, Dartmouth, Dracut, Easthampton, Groton, Lanesborough, Rochester, Sunderland and Westfield.

The program helps sustain active commercial farming on land that has been protected from development through DAR's APR Program. AIP provides technical assistance and business planning to improve farm productivity and profitability with the goal of enhancing the significance of APR farm operations and their contribution to the state's agricultural industry.

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This year's participating farms are located across the state and include orchards, vegetable farms, livestock operations, a vegetable and cranberry farm, a grain producer and a goat dairy.

Grant funds ranging from \$25,000 to \$100,000 per farm will be used for infrastructure improvements on APR farms such as a hay storage barn, new greenhouses, a vegetable packing facility with refrigeration, an energy-efficient grain dryer and high-density apple tree plantings.

Since 2009, the program has provided grant awards totaling more than \$2.9 million to 44 farms with 6,462 total acres of protected APR land.

Action: Promoting local agriculture

The Patrick Administration's Department of Agricultural Resources (DAR) has awarded \$200,000 in Buy Local grants to non-profit organizations dedicated to promoting local agriculture across Massachusetts. The Buy Local groups connect community farmers and consumers to encourage growing, purchasing and consuming of local agriculture, while promoting regional market venues and logistical assistance for farmers.

Pioneered in 1993 by regional agricultural communities committed to strengthening the connection between farms and the public, Buy Local groups have provided technical assistance to the agricultural industry and have served as a source of information to the community on where to purchase locally grown products.

Action: Matching grants for beginning MA farms

Matching grants totaling \$82,600 have been awarded to ten projects that will help beginning farmers grow or improve their new farm operations. Awarded through the Massachusetts Department of Agricultural Resources' (DAR) Matching Enterprise Grants for Agriculture (MEGA), grants went to farms in the communities of **Brewster, Charlton, Edgartown, Great Barrington, Lanesborough, Needham, North Dighton, Westport and Yarmouthport.**

The grants will help fund the purchase of equipment and other non-land based assets necessary for financially viable agricultural businesses. Projects include equipment to improve production and post-harvest operations, and to create value-added products, as well as infrastructure improvements such as irrigation systems and farmstands. Selected farmers participate in a business planning process, after which they are eligible to receive a grant of up to \$10,000 that they match dollar for dollar.

Spotlight on “Promote the development of the water innovation sector”

At the Symposium on Water Innovation in Massachusetts (SWIM) held in June 2013, Massachusetts energy officials announced three grant awards valued at \$150,000 to aid in the advancement of water innovation technology in the Commonwealth. “We invest in education, innovation and infrastructure because that's how we grow jobs and leave a stronger Commonwealth for the next generation,” said Governor Deval Patrick. “With that same focus, we can build a water technology supercluster, with the jobs and improved quality of life that come with it.”

“These grants will help bring innovation to the marketplace, creating jobs and positioning Massachusetts as a hub for investments in advanced water technology,” said Energy and Environmental Affairs (EEA) Secretary Rick Sullivan.

The SWIM brought together over 120 firms in the water innovation field to discuss growing the \$500 billion global industry here in Massachusetts. The three grants are being awarded under programs funded by the [Massachusetts Clean Energy Center](#) (MassCEC).

“Massachusetts is known around the world for its academic research, its skilled workforce and its technological application of bold and innovative ideas,” said MassCEC CEO Alicia Barton. “By bringing these groups together, we can position the Commonwealth as a leader in tackling these pressing global issues.”

In partnership with the [U.S. Environmental Protection Agency](#) (EPA) and the [NECEC Institute](#), MassCEC awarded up to **\$70,000 to Applied Environmental Technology** for a demonstration project that will test wastewater treatment technologies at the Massachusetts Alternative Septic System Test Center in Barnstable. The funding came from MassCEC's InnovateMass program, which provides grants to technology teams to test and showcase early-stage technologies in preparation for commercialization and sales into the marketplace.

The Applied Environmental Technology project is aimed at developing an effective and affordable septic system retrofit option for homeowners, particularly those in areas like Cape Cod, where the heavy use of septic systems leads to an over-abundance of nutrients in ground water.

"In partnership with MassCEC's InnovateMass program, NECEC Institute is providing an award to Applied Environmental Technology to support the demonstration and performance measurement of waste water technologies at the Mass Alternative Septic System Test Center," said Peter Rothstein, President of NECEC Institute and the [New England Clean Energy Council](#) (NECEC). “Together, MassCEC and NECEC Institute worked closely with the U.S. EPA to identify a pressing regional water challenge that can be addressed with innovative and commercially viable solutions. This shows what can be accomplished by bringing the private and public sectors together to accelerate innovation and growth in this dynamic sector.”

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MassCEC in partnership with the [Massachusetts Technology Transfer Center](#) (MTTC) awarded two projects each with \$40,000 as part MassCEC's Catalyst Program, which is administered by MTTC. The Catalyst Program aims to assist in the commercialization of new clean energy technologies from Massachusetts' startup companies or being spun out our world-class research institutions.

Receiving the \$40,000 grants under the Catalyst program are:





- Latika Menon, a researcher at Northeastern University, investigating an advanced filtration material that could potentially separate water from oil and other complex solutions.
- NBD Nanotechnologies, Inc., a startup led by Miguel Galvez and Joanna Wong of Boston University working on enhanced condensation technology for HVAC, heat exchangers, power plants, desalination plants and dehumidifiers.





"These small grants are very important in moving a technology from the idea stage to having a prototype that shows that the technology works, this type of funding is exceedingly important in supporting commercialization in the Commonwealth," said Abigail Barrow, director of the MTTC.

Massachusetts is a leading U.S. destination for water innovation with billion-dollar companies working in water technology and engineering, world-class research and graduate degree programs, a healthy venture capital sector and a dynamic innovation ecosystem. Massachusetts is home to nearly 300 water industry companies, organizations and institutions working to solve the world's water challenges. The two main water challenges facing Massachusetts are an aging infrastructure and nutrient loading as a result of the wide use of septic systems in coastal communities like Cape Cod. In 2012, Massachusetts was home to the most Small Business and Innovation Research (SBIR) grants per capita at 15 and the most Water Innovation Patents per capita in the country at nearly 120.




Following is a dashboard showing performance information for sustainable economic development measures





Dashboard of Key Measures: Sustainable economic development

GOAL	MEASURE	CURRENT PERIOD	PRIOR PERIOD	TREND	TARGET	STATUS	COMMENTS
Conduct permitting efficiently and responsively	% of permit applications that are reviewed within the guaranteed timelines	98.68%	98.77%	Stable	100%		FY13 vs. FY12
	% of permit applications that are reviewed within 180 days of receipt	97.53%	96.64%	Stable	90%		FY13 vs. FY12
	% of adjudicatory appeals resolved within 6 months from when the appeal is filed	85.71%	85%	Stable	100%		Current: For current period some appeals still open but within the same timeframe; excludes stayed cases and one remand. Prior: Despite the agency target of 6 months, by regulation [310 CMR 10.05(8)], appeals that are deemed “major” or “complex” have a seven month time-frame for resolution.
Plan, regulate, and invest consistent with the MA Sustainable Development Principles	% of working age residents living within ¼ mile of public transit	69%	n/a	n/a	Increase over prior year	n/a	From 2010 Census; Greater Boston area only.
	% of jobs reachable via public transit in 90 minutes	30%	n/a	n/a	Increase over prior year	n/a	From 2010 Census; Greater Boston area only.
	% of median household income comprised of housing and transportation costs	47%	n/a	n/a	Decrease over prior year	n/a	From 2010 Census; Greater Boston area only.
	MA counties where median household income comprised of housing and transportation costs is below 45%	1 of 14	No prior period data available	n/a	14 of 14		Barnstable 50.66; Bristol 52.17; Essex 47.19; Franklin 56.13; Hampden 50.56; Hampshire 56.58; Middlesex 48.11; Norfolk 50; Plymouth 50.67; Suffolk 38.26; Worcester 49.72. Berkshire, Dukes, & Nantucket not calculated due to insufficient sample size




STATUS LEGEND		
On Target	> = Target	
Close-to-Target	80% to 99% of Target	
Off Target	< 80% Target	
Not Applicable (N/A)		





Dashboard of Key Measures: Sustainable economic development (continued)

GOAL	MEASURE	CURRENT PERIOD	PRIOR PERIOD	TREND	TARGET	STATUS	COMMENTS
Promote the development of an innovative clean energy and efficient energy resources sector in MA	# of businesses in clean energy / efficient energy resources sector	5,577	4,995	Improving	Increase over prior year		FY13 vs. FY12
	# of employees in sector energy / efficient energy resources sector	79,994	71,523	Improving	Increase over prior year		FY13 vs. FY12
	# MW of renewable or alternative energy installed	250 MW solar installed in MA 100 MW of wind installed in MA	145 MW solar installed in MA 60 MW of wind installed in MA	Improving	Increase over prior year		FY13 vs. FY12

STATUS LEGEND		
On Target	> = Target	
Close-to-Target	80% to 99% of Target	
Off Target	< 80% Target	
Not Applicable (N/A)		

Dashboard of Key Measures: Sustainable economic development (continued)

GOAL	MEASURE	CURRENT PERIOD	PRIOR PERIOD	TREND	TARGET	STATUS	COMMENTS
Support the Commonwealth's legacy, resource-based industries (Commercial fishing)	# of businesses in the sector	n/a	n/a	n/a	Stabilize long term declining trend	n/a	CY11 vs. CY10
	# of employees in the sector	98,358	90,018	Improving			
	\$ Ex-Vessel value (millions)	680.0	641.8	Improving			
	\$ Estimated total economic impact (millions)	1,913.8	1,806.0	Improving			
Support the Commonwealth's legacy, resource-based industries (Agriculture)	# of businesses in the sector	7,700 farms	n/a	n/a		n/a	From 2007 USDA Census of Agriculture; awaiting delayed 2012 report, will update when available Includes production, processing, and support industries
	# of employees in the sector	18,582	n/a	n/a		n/a	
	\$ revenue (millions)	4,086.0	n/a	n/a		n/a	
	\$ Estimated total economic impact (additional statewide output and value added) (millions)	5,628.0	n/a	n/a		n/a	
Support the Commonwealth's legacy, resource-based industries (Forestry)	# of businesses in the sector	n/a	n/a	n/a		n/a	CY 2010 data From Farm Credit East report Includes production, processing, and support industries
	# of employees in the sector	4,015	n/a	n/a		n/a	
	\$ revenue (million)	\$1,588.8	n/a	n/a		n/a	
	Estimated total economic impact of statewide output, value added, and jobs to account for spillover effects	Additional output: \$1,171.4 Value added: \$1,253.1 Add'l jobs created: 7,096				n/a	

STATUS LEGEND		
On Target	> = Target	
Close-to-Target	80% to 99% of Target	
Off Target	< 80% Target	
Not Applicable (N/A)		

Theme 2: Quality of Life

Goal: Protect public health by ensuring healthy air, safe drinking water, and low exposure to contaminants

Action: Updating regulations impacting Licensed Site Professionals (LSPs) and wastesite cleanup

The Commonwealth of Massachusetts is a leader when it comes to the remediation of contaminated properties thanks to our first-in-the-nation waste site cleanup rules that require responsible parties and their licensed consultants to assess and address problem sites. This innovative program resulted in the permanent cleanup of 1,276 toxic sites in 2012 and 30,879 sites and counting since the regulation was implemented 20 years ago.

As a vote of confidence in the success of the waste site cleanup program, and under Governor Deval Patrick's directive that all state agencies update their regulations, the Massachusetts Department of Environmental Protection (MassDEP) will soon publish amendments to the regulations. The amendments will build on the program's 20 years of experience and further streamline and simplify the process, without in any way lowering our strict environmental standards.

These changes will result in better cleanups, increased incentives for developers to clean up and redevelop contaminated sites, and better information for local communities.

At the time we launched this reform, some likened it to "the fox-guarding-the-henhouse" and feared that privatizing the program with LSPs and removing MassDEP's day-to-day oversight would endanger the public. But this hasn't happened. We audit 50 percent of these sites every year, and rarely have found instances in which the cleanup compromised public health. In fact, the public has been far better served by this program, because contaminated sites are being cleaned up more quickly, rather than languishing.

The lesson is that it works best when government sets the goal, but harnesses the ingenuity and resources of the private sector to help meet them.

Having delivered on the promise of faster and better cleanups for the past 20 years, the newly updated Massachusetts waste site cleanup program is again poised to meet public, environmental and business interests in the years ahead.

Action: Clean Markets Program

As a result of the first round of the Patrick Administration's \$983,907 MassCleanDiesel: Clean Markets Program, 25 trucking and food service companies were able to eliminate 2,400 tons of pollutant emissions from their diesel refrigerated trailers and long-haul trucks, collectively saving \$707,623 in fuel costs in the process.

The Massachusetts Department of Environmental Protection (MassDEP) offered the grants to trucking and refrigeration companies serving wholesale food markets, distribution centers, and warehouses. MassDEP targeted these centers for pollution reductions because long-haul trucks and storage trailers run their diesel engines to refrigerate their products while waiting to unload at one of these types of facilities. Some of the markets, such as the Fisherman's Market in New Bedford, are located in dense, urban areas; operating diesel engines under these conditions can have a significant impact on the air quality in adjacent communities.

The reductions in carbon dioxide (CO₂), one of many pollutants responsible for global warming, were by far the most significant. M.J. Bradley & Associates, a consulting firm working for MassDEP, determined that 2,348 tons of CO₂ will be reduced each year that the trucks and storage trailers continue to operate (an estimated 12 years for an Electric Transportation Refrigeration Unit (eTRU) and 15 years for an Auxiliary Power Unit (APU) and retrofit).

APUs and eTRUs also significantly reduce diesel fuel use, providing an economic boost to truckers paying premium costs for diesel fuel. With an APU, a trucker can save an average of \$6,289 a year in reduced fuel use, based on an estimated 2,000 hours of operation at \$3.91 for a gallon of diesel fuel. Depending on the annual number of hours of operation, an eTRU user, on average, can save more than \$10,800 a year.

In total, APUs and DOCs worth \$267,661 were installed on 23 long-haul trucks owned by 14 hauling companies and individuals, and eTRUs worth \$716,246 were installed on 52 stationary trailers owned by 11 food refrigeration companies.

Action: Putting zero-emissions vehicles on the road

Governors from eight states, including Massachusetts, have developed a groundbreaking initiative to put 3.3 million zero-emission vehicles on the roads in their states within a dozen years.

These governors have joined forces to revolutionize the automobile market by promoting zero-emission vehicles. The use of these clean vehicles will reduce greenhouse gas emissions, improve air quality and public health, enhance energy diversity, save consumers money and promote economic growth.

Zero-emission vehicles include battery-electric vehicles, plug-in hybrid-electric vehicles, and hydrogen fuel-cell-electric vehicles. These technologies can be used in passenger cars, trucks and transit buses. The multi-state effort is intended to expand consumer awareness and demand for zero-emission vehicles. As a first step in this plan, the governors of California, Connecticut, Maryland, Massachusetts, New York, Oregon, Rhode Island and Vermont signed a cooperative agreement. In this agreement, the governors identify specific actions they will promote within their states and joint cooperative actions these states will undertake to help build a robust national market for electric and hydrogen-powered cars.

For example, the governors agreed to pursue the following efforts:

- Harmonize building codes to make it easier to construct new electric car charging stations
- Lead by example by including zero-emission vehicles in their public fleets
- Evaluate and establish, where appropriate, financial and other incentives to promote zero-emission vehicles
- Consider establishing favorable electricity rates for home charging systems
- Develop common standards for roadway signs and charging networks

The eight states will develop an action plan over the next six months that will include many of these strategies and others.

Goal: Improve access to and quality of outdoor recreational opportunities

Action: Investing in urban parks

The energy and environment investments made in the FY14 Capital Plan focus on the Patrick Administration's goals of investing in urban parks, preserving working farms and forests and protecting large natural landscapes for habitat. Funding to further these goals includes \$10 million for Urban Signature Parks; \$5 million for urban playgrounds and spray parks; \$10 million to address critical coastal infrastructure needs; and \$250,000 to "green" the Gateway Cities.

In addition to Boston, four other communities, Chelsea, Malden, Medford and Somerville, received \$400,000 PARC grants. The PARC Program (formerly the Urban Self-Help Program) was established in 1977 to assist cities and towns in acquiring and developing land for park and outdoor recreation purposes. Any community with an up-to-date Open Space and Recreation Plan is eligible to apply for the program.

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A Gateway City Parks grant of \$850,000 was awarded to the Lynn Common Renovation project. EEA created the Gateway City Parks Program in 2009 to develop and restore parks in urban neighborhoods. The program is designed to be flexible and provide municipal officials with a menu of funding options for all phases of park development. Twenty-six Massachusetts cities are eligible for the program, which targets communities with populations greater than 35,000 and median household incomes, per capita incomes and educational attainment levels below the state average.

Strengthening the Patrick Administration's commitment to urban park investments, Secretary Sullivan announced a new grant program that will build a playground or spray park in each of the Commonwealth's 54 cities. The Our Common Backyards grant program will help cities create or renovate parks in the neighborhoods that need them most. Each city is eligible to receive up to \$200,000 in grant assistance. The Our Common Backyards grant application opened on December 17, 2013 and applications will be taken until February 13, 2014.

Action: Investing in parks across the Commonwealth

The Patrick Administration provided more than \$4.3 million in investments for parks, recreational spaces and open space conservation in sixteen western Massachusetts communities. In addition to Easthampton, six other communities, Adams, Amherst, Athol, Holyoke, Springfield and West Springfield, received PARC grants. The PARC Program (formerly the Urban Self-Help Program) was established in 1977 to assist cities and towns in acquiring and developing land for park and outdoor recreation purposes. Any town with a population of 35,000 or more year-round residents, or any city regardless of size, that has an authorized park/recreation commission is eligible to participate in the program.

Governor Deval Patrick previously announced \$1.7 million in PARC and Gateway City Parks grants to complete improvements to First Street Common in Pittsfield. The First Street Common is the only large, accessible public open space that serves the Morningside neighborhood of Pittsfield, and the completion of this project will help create a stronger connection between the downtown community and the surrounding neighborhoods.

A Gateway City Parks grant also went to Chicopee. The city will use \$805,000 to complete phase two of the Szot Park Stadium improvement project. EEA created the Gateway City Parks Program in 2009 to develop and restore parks in urban neighborhoods. The program is designed to be flexible and provide municipal officials with a menu of funding options for all phases of park development. Twenty-six Massachusetts cities are eligible for the program, which targets communities with populations greater than 35,000 and median household incomes, per capita incomes and educational attainment levels below the state average.

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Amherst and Belchertown received Local Acquisitions for Natural Diversity (LAND) grants. Amherst will use its \$105,665 grant to create a new community garden with a trail integrated throughout the property in East Amherst Village Center along the Fort River. Belchertown will use its \$133,650 grant to double the size of the Jabish Brook Conservation Area. Since 1961, LAND grants have helped cities and towns acquire land for conservation and outdoor recreational uses. To qualify for the reimbursement grants, communities must fund projects upfront and the protected open space must be open to the public.

The LAND Program (formerly the Self-Help Program) was established to assist municipal conservation commissions in acquiring land for natural resource protection and passive outdoor recreation purposes. The grant provides reimbursement funding for the acquisition of land or a conservation restriction, as well as for limited associated acquisition costs. Lands acquired may include forests, fields, wetlands, wildlife habitat, unique natural, historic or cultural resources, and some farmland. Access by the general public is required. Appropriate passive outdoor recreational uses such as hiking, fishing, hunting, cross-country skiing, and bird watching are encouraged.

Since taking office, Governor Patrick has made a historic investment of more than \$300 million in land conservation focused on three goals: investing in urban parks, preserving working farms and forests and protecting large natural landscapes for habitat. This investment has resulted in the permanent protection of more than 110,000 acres of land and the renovation or creation of more than 170 parks. The new parks and open space created are within a ten minute walk of 1.5 million residents – about a quarter of the Commonwealth’s residents.

Action: Completion of 18 Massachusetts fishing and boating access projects

This year’s boating access projects, managed by the Office of Fishing and Boating Access (FBA), include repair and new construction of boat ramps, cartop boat access areas, new boarding floats, barrier-free fishing piers, renovations to parking areas and road repairs.

Funds for the acquisition, construction and maintenance of FBA facilities comes from several sources; state general funds, bond appropriations, revenue from the sale of the Division of Marine Fisheries’ recreational salt water fishing permits, and federal reimbursements by the U.S. Fish & Wildlife Service under the federal Sport Fish Restoration Act..

The \$1.64 million invested in the projects has generated more than \$2.75 million in economic activity for the Commonwealth, including engineering services, construction, and building materials.

Goal: Increase the public's access to locally-grown food, agriculture, wood, and fisheries products

Action: Developing Boston Public Market

Governor Patrick and the Massachusetts Department of Agricultural Resources are working with the City of Boston and the community to develop a public market in downtown Boston. Once complete, the market will house a variety of the region's finest local produce, dairy, meats, seafood, specialty foods and beverages, flowers and more. Located on [Blackstone Street near the Rose F. Kennedy Greenway](#), the market will be a major new landmark for the Commonwealth and the city.

Action: Farmers' markets accepting SNAP benefits

EEA and the Executive Office of Health and Human Services (EHS) have joined forces to promote the healthy food choices people can make at farmers' markets and demonstrated accessibility for people using the federal Supplemental Nutritional Assistance Program (SNAP) benefits. Together, they helped promote local farms and agri-businesses that provide locally grown food that tastes and looks better at a more affordable price than imported food.

Currently, Massachusetts has 250 farmers markets, 118 of which accept SNAP benefits.

Goal: Enhance access to reliable, efficient, clean, and cost-effective energy resources within a framework where Massachusetts serves as a national leader in renewable and clean resource development

Action: Commercial food waste ban, converting to renewable energy

MassDEP has proposed a commercial food waste ban, to take effect by July 1, 2014, that would require any entity that disposes of at least one ton of organic waste per week to donate or re-purpose the useable food. Any remaining food waste would be required to be shipped to an anaerobic digestion (AD) facility, a composting operation or an animal-feed operation. Residential food waste is not included in the ban.

To harness the energy in organic waste, the Patrick Administration has made \$3 million in low-interest loans available to private companies building AD facilities. The low-interest loans will be administered by BCD Capital through MassDEP's Recycling Loan Fund, with monies provided by the Department of Energy Resources (DOER).

DOER is also making \$1 million available in grants for anaerobic digestion to public entities through MassDEP's Sustainable Materials Recovery Grant Program. MassDEP and DOER have awarded the first AD grant of \$100,000 to the Massachusetts Water Resources Agency (MWRA) for its wastewater

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treatment plant at Deer Island plant. The MWRA currently digests sludge in 12 large chambers to help run the plant. A pilot project will introduce food waste into one of the chambers to determine the effects of co-digestion on operations and biogas production.

Food waste and organics make up 20-25 percent of the current waste stream going to landfills and incinerators. The proposed food waste ban would help the Commonwealth reach its goals to reduce the waste stream by 30 percent by 2020 and 80 percent by 2050. To ensure that there will be sufficient facilities in Massachusetts to handle the waste resulting from the ban, MassDEP is working with the Massachusetts Division of Capital Asset Management and Maintenance to conduct feasibility studies to build AD facilities on state-owned land.

AD facilities have become more popular in Massachusetts in recent years at facilities such as dairy farms, municipal landfills and wastewater treatment plants. Over the past year, the Massachusetts Clean Energy Center (MassCEC) has awarded 18 grants worth \$2.3 million to study, design and construct AD and other organics-to-energy facilities across the Commonwealth.

Action: Awarded \$3.7 million in grants to fund scores of clean energy projects in 20 communities across the Commonwealth

DOER Green Communities Competitive Grants are awarded to existing Green Communities that have successfully invested their initial designation grants. Awards are capped at \$250,000 per municipality.

The grants, totaling \$3,715,756, are funded through proceeds from Regional Greenhouse Gas Initiative auctions (RGGI). The goal of the Green Communities Competitive Grant program is to support energy efficiency and renewable energy projects that further the clean energy goals of previously designated Green Communities. The projects range from upgrades to ventilation systems and lighting to installation of insulation and energy management systems at municipal buildings and facilities.

There are 123 Green Communities across the state and 45 percent of Massachusetts residents - 2.9 million people - live in Green Communities. All Green Communities commit to reducing their municipal energy consumption by 20 percent.

Action: Largest procurement of green energy by state's utilities

Massachusetts' four utility companies have filed contracts with the Department of Public Utilities (DPU) for the largest procurement of renewable energy in New England. The joint procurement by Northeast Utilities, which owns and operates NSTAR and Western Massachusetts Electric Company (WMECo), National

Grid, and Unitil would provide 565 megawatts (MW) of renewable energy, enough to power about 170,000 homes. The weighted average price from all of the contracts is less than eight cents per kilowatt hour (kWh).

In August 2012, Governor Patrick signed into law new energy legislation directing Massachusetts' electric distribution companies to solicit proposals for long-term contracts associated with renewable energy projects to provide four percent of their total energy demand. This procurement builds upon the success of the first major procurement of renewable energy that Massachusetts utilities conducted two years ago through a provision in the Green Communities Act which Governor Patrick signed in to law in 2008. Through that procurement process, each of the utilities executed long-term contracts for separate energy projects. Massachusetts and New England both have significant renewable energy resources. Massachusetts has more than 1,000 MW of wind energy potential onshore and over 6,000 MW offshore, while New England could power over 24 percent of its electricity needs from its more than 10,000 MW of wind energy potential. The Patrick Administration reached its goal of 250 MW of solar installed earlier this year, 4 years early, and set a new goal of 1,600 MW. When that goal is reached, it will generate enough electricity to power approximately 240,000 homes annually – the equivalent of 97 percent of Boston households. The Patrick Administration is currently working closely with other New England states on a regional strategy to unlock more clean energy opportunities from both renewable energy and large hydro.

Currently, Massachusetts has 311 megawatts of solar power installed, with more than 130 megawatts installed in 2012 alone. That's enough electricity to power more than 46,600 homes and, when compared with fossil fuel-generated electricity, the equivalent of eliminating the GHG emissions from 32,224 cars per year.

There has been an increase in wind energy from 3 megawatts to 103 megawatts since 2007, enough to power more than 30,867 homes and eliminate GHG emissions from more than 21,345 cars annually.

Action: Energy and environment improvement projects at MA farms

EEA awarded 56 grants to Massachusetts farmers to implement renewable energy systems, improve energy efficiency on farms and help farmers reduce or prevent negative impacts to natural resources from agricultural practices. Twenty-three grants from the Massachusetts Department of Agricultural Resources' (DAR) Agricultural Energy (Ag-Energy) Grant Program will fund projects to reduce energy consumption and increase renewable energy use at Massachusetts farms. The projects include photovoltaic systems for vegetable and orchard operations, variable speed vacuum pumps for dairies, reverse osmosis machines for maple syrup operations and shade screens for greenhouses.

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Thirty-three grants from DAR's Agricultural Environmental Enhancement Program (AEEP) will fund projects like automated irrigations systems for cranberry operations, milkhouse wastewater treatment, manure storage areas, fencing and pesticide storage.

The Ag-Energy Grant and AEEP programs are two of several within DAR's Division of Agricultural Conservation and Technical Assistance (DACTA). The division's mission is to provide technical assistance, training, conservation and funding to promote economically viable and environmentally sound agricultural practices in Massachusetts.

The Ag-Energy grants have funded 143 projects statewide since 2009, providing growers and producers more than \$1.9 million to address energy issues on their farms. This year, 38 applicants submitted requests for a variety of energy efficiency and renewable energy projects totaling approximately \$810,000. AEEP funds practices that improve water and air quality as well as promote water conservation. Farmers selected to participate are reimbursed for the approved costs of materials and labor up to \$25,000.

Action: Community Wind Energy Initiative

EEA has developed an inter-agency initiative for state energy and environmental agencies to provide support and guidance to municipalities, developers and stakeholders for land-based wind projects. The Community Wind Outreach Initiative will include a coordinated community wind working group, with representatives from EEA, the Department of Energy Resource (DOER), the Massachusetts Clean Energy Center (MassCEC), the Massachusetts Department of Environmental Protection (MassDEP) and the Energy Facilities Siting Board (EFSB). MassDEP will also convene a technical advisory group of experts to solicit input on wind turbine sound policy.

Action: Regional initiative for large hydro power

Massachusetts, Connecticut, Maine, Rhode Island and Vermont, have launched a regional initiative to expand large hydro imports into New England. The collaboration is part of the Patrick Administration's continued focus on expanding cleaner, cheaper power options for the Commonwealth.

The New England States Committee on Electricity (NESCOE) will evaluate the opportunities, options and issues relating to the expansion of large hydro into New England. Massachusetts and other states will consider those findings and, as warranted, incorporate them into a strategic plan to be presented to the New England Governors for their consideration later this year. The Massachusetts Department of Energy Resources (DOER) will play a lead agency role for this new large hydro initiative on behalf of the Commonwealth, and work closely with NESCOE to develop options for expanded large hydro imports.

This regional approach will seek to utilize economies of scale to unlock imports from the significant resources in neighboring Canadian provinces, including the Maritimes and Quebec. The partnering states recognize the benefits of clean hydroelectricity, including reducing and stabilizing electricity prices, enhancing fuel diversity, increasing electric grid reliability, reducing environmental impact from the energy sector, and encouraging an energy future that utilizes resources from within the region and nearby borders.

This regional work will build upon NESCOE's current work on a coordinated regional procurement for renewable energy. Governor Deval Patrick proposed a resolution at the New England Governor's Conference last summer in Vermont that passed unanimously and directs NESCOE to develop a request for proposal (RFP) in 2013 for a significant amount of renewable energy. NESCOE has developed a draft RFP and Power Purchase Agreement (PPA) and plans on announcing an RFP release date soon.

Action: Solarize Massachusetts program

Ten communities will participate in the first round of the 2013 Solarize Massachusetts program (Solarize Mass), a grassroots clean energy marketing, education and group-buying program.

The program – run by the Massachusetts Clean Energy Center (MassCEC) and the Massachusetts Department of Energy Resources (DOER) – is designed to increase the adoption of solar energy and further reduce the overall cost of solar power, and offers residents and businesses discounted pricing for solar. The more people in a particular community who participate, the greater the savings for everyone in that city or town.

Participating in the first round of the 2013 Solarize Mass program are **Bourne, Brookline, Carlisle, Chelmsford, Lee, Medford, Medway, Newton, Northampton and Williamstown**. Carlisle and Chelmsford will be participating in the program as a group.

MassCEC and DOER will work with community volunteers and municipal representatives in each community to select a designated installer through a competitive bidding process. Eight of the communities participating in this round (Brookline, Carlisle, Chelmsford, Medford, Medway, Newton, Northampton and Williamstown) are Green Communities, a designation made by DOER to cities and towns that meet five clean energy requirements, including a commitment to reduce their energy use by 20 percent and to streamline the responsible siting of renewable energy such as solar photovoltaics. Bourne and Lee are the first non-Green Communities to participate in Solarize Mass since it first launched as a pilot program in 2011.

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Last year, 17 cities and towns participated in Solarize Mass, with 749 residents and businesses signing contracts to install solar electricity systems with the capacity to generate 4.8 megawatts of clean, renewable energy – enough to power the equivalent of 719 average Massachusetts homes annually. During the 2012 Solarize Mass program, participating customers were able to purchase solar electricity systems for 20 percent less than the statewide average price at the beginning of the program. The program last year also created at least 32 new jobs.

Due to state renewable energy incentive programs like Solarize Mass, residential solar electricity prices dropped 28 percent in Massachusetts in 2012, according to a report issued by the Solar Energy Industries Association in March 2013. This was the second biggest drop in the nation last year.

Action: Nation-leading energy efficiency plans

For the third year in a row, the American Council for an Energy-Efficient Economy (ACEEE) has ranked Massachusetts as the number one state for energy efficiency policies and programs. Governor Patrick joined ACEEE on a nationwide conference call as it announced the [annual state-by-state scorecard](#).

Massachusetts continues to take an innovative approach to invest in energy savings, create clean energy jobs and reduce reliance on foreign sources of energy, while cutting greenhouse gas (GHG) emissions.

The Commonwealth's energy efficiency and clean energy goals were outlined when Governor Patrick signed the Green Communities Act, the Green Jobs Act and the Global Warming Solutions Act in 2008. ACEEE again highlighted the Green Communities Act as a central component to Massachusetts' achievements.

For the third time, Massachusetts topped California in ACEEE's State Energy Efficiency Scorecard. California held the top slot on the national scorecard for the first four years. ACEEE ranked Massachusetts fourth in the inaugural scorecard, but the Commonwealth reached number two in 2009 and held that slot for two years, before reaching number one in 2011 and 2012.

The 2013-2015 Statewide Three-Year Energy Efficiency Plans, credited in the report, are expected to deliver energy benefits of nearly \$9 billion to residents, businesses, and state and local governments based on an investment of \$2.25 billion.

ACEEE's state scores are calculated based on utility efficiency programs and policy, transportation, building energy codes, combined heat and power projects, state government initiatives and appliance efficiency standards.

Spotlight on Solar

On May 1, 2013, Governor Deval Patrick joined Energy and Environmental Affairs Secretary Rick Sullivan and other energy officials to celebrate 250 megawatts of solar energy installed – reaching the Patrick-Murray Administration’s goal four years early – and announced a new goal of 1,600 MW by 2020.

“When we set ambitious goals and invest in achieving them, Massachusetts wins,” said Governor Patrick. “The many businesses and homeowners who have taken advantage of cost effective renewable energy installations are helping to create both a safer and a more prosperous Commonwealth for the next generation.”

Under Governor Patrick’s leadership, the amount of solar energy installed has increased 80 times from the 3 MW installed in 2007. Massachusetts has established strong incentives for renewable energy production that have led to significant cost reductions in solar electricity, making clean energy more accessible to Massachusetts businesses and residents.

“This exciting announcement is a direct result of Governor Patrick’s leadership in the clean energy revolution,” said Secretary Sullivan. “The initiatives and incentives we have established in Massachusetts are saving residents money, creating jobs and protecting our environment.”

“Massachusetts has a lot to celebrate, including the success we’ve had reducing the cost of solar,” said Department of Energy Resources Commissioner Mark Sylvia. “Those businesses, cities and towns, and homeowners who invest in renewable energy will reap the benefits of stable, reliable costs from this clean, local source of electricity.”

The Commonwealth’s Renewable Portfolio Standard (RPS) Solar Carve-Out program has established a strong solar energy market in Massachusetts, with a current cap of 400 MW. As that target approaches, state energy officials are fast-tracking revisions to expand the program.

Residential solar electricity prices dropped 28 percent in Massachusetts in 2012, according to a report issued by the Solar Energy Industries Association in March 2013. This was the second biggest drop in the nation last year.

In addition to strengthening the RPS, the Green Communities Act, signed by Governor Patrick in 2008, established the Green Communities designation and grant program that provides technical assistance and incentives to support solar development in the Commonwealth’s municipalities. There are currently 110 designated Green Communities in the Commonwealth and nearly half of all Massachusetts residents live in a Green Community.

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These targeted investments have led to economic growth and job creation. The Massachusetts Clean Energy Center's (MassCEC) 2012 Massachusetts Clean Energy Industry Report showed an 11.2 percent growth in Massachusetts clean energy jobs between 2011 and 2012. Nearly 5,000 clean energy firms employ more than 71,000 clean energy workers.

"The success of the solar industry and the clean energy sector as a whole is a testament to the commitment Massachusetts has made to become a renewable energy leader," said MassCEC CEO Alicia Barton. "While we celebrate the success of one goal, we're excited to tackle the next, creating more local jobs and keeping more energy dollars here at home."

The solar power installed in Massachusetts generates enough electricity to power more than 37,000 homes for a year, and when compared with fossil fuel-generated electricity, is the equivalent of eliminating the greenhouse gas emissions from nearly 26,000 cars a year.





When the new goal is reached, 1,600 MW of installed solar will generate enough electricity to power approximately 240,000 homes annually – the equivalent of 97 percent of Boston households – and reduce the greenhouse gas emissions produced by about 166,000 cars.

"The Solar Energy Industries Association (SEIA) applauds the Commonwealth's phenomenal success in attracting investment, innovative companies and jobs while driving down costs," said SEIA Senior Vice President of State Affairs Carrie Cullen Hitt. "Massachusetts ranks number seven in the nation for solar installations (2012) and number two for driving down costs, which dropped over 28 percent in 2012. We look forward to expanding this success with Governor Patrick and his team."






Massachusetts sits at the end of the energy pipeline, spending billions of dollars annually to import all of its fossil fuel based energy sources from places like South America, Canada and the Middle East. That is lost economic opportunity that Massachusetts stands poised to reclaim through investments in home-grown renewable energy programs.

Following is a dashboard showing performance information for quality of life measures


Dashboard of Key Measures: Quality of Life





GOAL	MEASURE	CURRENT PERIOD	PRIOR PERIOD	TREND	TARGET	STATUS	COMMENTS
Protect public health by ensuring healthy air, safe drinking water, and low exposure to contaminants	Massachusetts annual attainment status for the six National Ambient Air Quality Standards (NAAQS)	In Attainment: • NOx • Lead • CO • PM • SO2 Not in Attainment: • Ozone	In Attainment: • NOx • Lead • CO • PM • SO2 Not in Attainment: • Ozone	Stable	Attainment for all six NAAQS pollutants		CY12 vs. CY11 Ozone non-attainment Dukes County only. All other MA counties are in full attainment. Attainment status of some pollutants based on average of 3 years of data.
	% of “community” public drinking water systems that meet all applicable health-based standards	82.5%	84.4%	Stable	100%		CY12 vs. CY11 In accordance with the MassDEP Enforcement Response Guide all of these violations have been addressed and the systems are in compliance or on the path to compliance. Due to recent changes to federal drinking water standards (which will result in the same changes to MA standards); MassDEP expects these %s to increase. The MA target is more stringent than U.S. EPA’s current national target of 90%.
	% of contaminated sites (oil or hazardous materials that are cleaned up within 6 years of first being identified or listed)	92.4%	91.3%	Stable	95%		FY13 vs. FY12 MassDEP is advancing a combination of proposed regulatory reforms, new guidance, and enforcement activities that the agency hopes will increase the percentage towards the 95% goal.
	% of contaminated sites with imminent hazard conditions where the imminent hazard is resolved within 90 days	99%	99%	Stable	100%		FY13 vs. FY12

Dashboard of Key Measures: Quality of Life (continued)






GOAL	MEASURE	CURRENT PERIOD	PRIOR PERIOD	TREND	TARGET	STATUS	COMMENTS
Improve access to and quality of outdoor recreational opportunities	Number of MassParks Passes sold	2,694	2,577	Improving	Increase over prior year		This includes Resident and Non Resident MassParks Passes which allow free parking at over 50 facilities that charge a parking fee.
	Number of MassParks Passes Distributed Free to Libraries	226	197	Improving	Increase over prior year		One Free MassParks Pass is offered to the main branch of the public library in all 351 cities and towns. Numbers reflect communities that have requested pass.
	Number of MassParks Passes Distributed Free to Municipal Parks and Recreation Departments	98	85	Improving	Increase over prior year		One Free MassParks Pass is offered to the parks and recreation departments in all 351 cities and towns. Numbers reflect communities that have applied for pass.
	# of public municipal parks built or restored	Will report parks/created restored annually henceforth	150 parks created or restored from FY07- FY12	TBD: working on disaggregating cumulative data to display annual trend line	<u>Initial Target:</u> Creation or restoration of at least one park in all 51 MA Cities	n/a	One city to go to meet the Initial Target <u>Secondary Target:</u> Under development
	# of boat ramps, fishing piers, canoe/cartop access sites, & ramps built or renovated	10	10	Stable	8 to 16		FY13 vs. FY12 Meeting target is dependent on the cost of individual projects in a given year and the funding available
	# of inland fishing and hunting licenses sold	225,899 (FY08 to FY12 average)	214,865 (FY03 to FY07 average)	Long term: Worsening Short term: Improving	Stabilize long term declining trend		Due to annual fluctuations license sale trends are monitored on a 5 year average

Dashboard of Key Measures: Quality of Life (continued)

GOAL	MEASURE	CURRENT PERIOD	PRIOR PERIOD	TREND	TARGET	STATUS	COMMENTS
Increase public's access to locally-grown food, agriculture, wood, and fisheries products	# of Commonwealth Quality Program participants	88	75	Improving	Increase over prior year		FY13 vs. FY12 3 Aquaculture; 3 Cranberry; 4 Dairy; 13 Forestry; 14 Lobster; 51 Produce
	# of schools participating in "Farm to School Project"	320	n/a	Improving	Increase over prior year	n/a	FY13 231 Public School Districts; 89 Colleges & Independent K-12 Schools; 114 Farms
	# of farmers' markets	250 farmers markets	n/a	Improving	Increase over prior year	n/a	FY13
	% of farmers' markets participating in SNAP	50%	n/a	Improving	Increase over prior year	n/a	FY13 ~48% increase in SNAP participation
	# of urban communities establishing guidelines and/or regulations encouraging the development of commercial agricultural enterprises	~ 14 communities are working to establish guidelines and regulations	n/a	Improving	Increase over prior year	n/a	FY13 It should be noted that such activities are new to MA











STATUS LEGEND		
On Target	> = Target	
Close-to-Target	80% to 99% of Target	
Off Target	< 80% Target	
Not Applicable (N/A)		

Dashboard of Key Measures: Quality of Life (continued)

GOAL	MEASURE	CURRENT PERIOD	PRIOR PERIOD	TREND	TARGET	STATUS	COMMENTS
Enhance access to reliable, efficient, clean, and cost-effective energy resources within a framework where MA serves as a national leader in renewable and clean resource development	# of Green Communities	110	103	Improving	Increase over prior year		FY13 vs. FY12
	# of MW of solar/wind sited and in use (RPS and APS-qualified)	1,868 MW RPS Class I Qualified Capacity	1,450 MW RPS Class I Qualified Capacity	Improving	Increase over prior year		FY13 vs. FY12
	# of MW of renewable or alternative energy installed	250 ¹ MW solar installed in MA 100 MW of wind installed in MA	145 MW solar installed in MA 60 MW of wind installed in MA	Improving	Increase over prior year		FY13 vs. FY12
	System Average Interruption Duration Index (SAIDI)	See chart on next page					
	System Average Interruption Frequency Index (SAIFI)						
	National ranking of retail energy cost	43rd	43rd	Stable	Improvement in our ranking		FY13 vs. FY12
	Massachusetts ACEEE ranking	#1 in the Nation	#1 in the Nation	Stable	Remain in Top 3		FY13 vs. FY12 We want to remain number one in the nation.

¹ As of January 1, 2014, 425 MW of solar have been installed

Table of System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI)

COMPANY	MEASURE	CURRENT PERIOD	PRIOR PERIOD	TREND	TARGET	STATUS	COMMENTS
NSTAR Electric Company	SAIDI ²	72.2	127.9	NSTAR shows a persistent downward trend (i.e., improved reliability) in both SAIDI and SAIFI categories over a 17 year period.	See comment section		The current performance (i.e., the average of 2008-2012) is compared to the historic 10 year average of 1996-2005; we list the five year current average, as a single year's data may be anomalous.
	SAIFI ³	0.8	1.2				
Fitchburg Gas and Electric Company (Unitil)	SAIDI	134.5	136.5	FGE shows consistent performance with a slight downward trend (i.e., improved reliability) in both SAIDI and SAIFI categories over a 17 year period.			Target for each company is based on performance either one standard deviation above or below historic ten-year average.
	SAIFI	1.8	1.7				Excluded from this data are interruptions in service that are caused by fire, earthquake, or storm resulting in a state of emergency. Such events are excluded because SAIDI and SAIFI are intended to measure "day to day performance," and such events could skew such analysis. Such large events are investigated through other regulatory processes, as needed. According to current regulations, each electric company's performance is compared to their own historic 10 year benchmark (the average of 1996-2005). Regulations are currently under review, including changing this benchmarking approach.
Massachusetts Electric Company (National Grid)	SAIDI	123.2	114.3	MEC Shows upward trend (i.e., worsening reliability) in SAIDI, but decreasing trend (i.e., improved reliability) in SAIFI over a 17 year period.			
	SAIFI	1.0	1.3				
Nantucket Electric Company (National Grid)	SAIDI	32.8	24.1	NEC Shows upward trend (i.e., worsening reliability) in SAIDI, but decreasing trend (i.e., improved reliability) in SAIFI over a 17 year period.			
	SAIFI	0.3	0.4				
Western Massachusetts Electric Company	SAIDI	159.7	126.9	WMECO Shows upward trend (worsening reliability) in SAIDI and SAIFI over a 17 year period.			
	SAIFI	1.2	1.0				

²SAIDI - System Average Interruption Duration Index - average number of minutes of interruption per year per customer³SAIFI - System Average Interruption Frequency Index - average number of interruption per year per customer

Theme 3: Resource Protection

Goal: Reduce greenhouse gas emissions 25% below 1990 levels by 2020, and at least 80% below 1990 levels by 2050

Action: Developed GWSA dashboard

The Massachusetts Executive Office of Energy and Environmental Affairs (EEA) launched a [new dashboard](http://www.mass.gov/eea/air-water-climate-change/climate-change/massachusetts-global-warming-solutions-act/) (<http://www.mass.gov/eea/air-water-climate-change/climate-change/massachusetts-global-warming-solutions-act/>) for Global Warming Solutions Act (GWSA) initiatives. “The new dashboard will communicate the Commonwealth’s progress towards reducing our greenhouse gas (GHG) emissions and help us shape future GHG reduction policies,” said EEA Secretary Rick Sullivan. “It’s also a great tool to engage the citizens of the Commonwealth so they can monitor, measure and contribute to our work toward meeting our GWSA goals for 2020 and beyond.”

The Boston-based Barr Foundation awarded the Patrick Administration with grant funding last year to develop both *The Massachusetts Clean Energy & Climate Performance Management System* (CCPMS) that EEA will use to manage implementation of *The Massachusetts Clean Energy & Climate Plan for 2020* (CECP) and a public facing dashboard that shows EEA’s progress towards compliance with our 2020 GHG emission limits.

The dashboard aims to be a user-friendly and engaging website that utilizes cutting-edge graphics and case studies to present data and enhance public awareness on the status of GWSA implementation.

The system is one of the first of its kind nationwide, and is expected to serve as a regional and national model that other states can adopt to analyze their efforts in reducing GHG emissions.

Action: RGGI amendments

The Patrick Administration issued final amendments to a regulation that will reduce up to 90 million tons of carbon dioxide emissions from power plants across nine New England and Mid-Atlantic States during the next six years.

Massachusetts and eight other states – Connecticut, Delaware, Maine, Maryland, New Hampshire, New York, Rhode Island and Vermont – are part of the Regional Greenhouse Gas Initiative (RGGI), which is the nation’s first “cap-and-trade” program. Power plants in the RGGI states must purchase “allowances”

that allow them to emit carbon dioxide. The states auction off these allowances and use the proceeds for public purposes, especially investments in energy efficiency, which create jobs and keep energy spending local.

The revisions to the Commonwealth's RGGI program, as well as similar changes in the other eight states, will lower the existing "cap" on power plant emissions in the RGGI states from the current level of 165 million tons per year to 91 million tons per year starting in 2014. The cap will then be lowered by 2.5 percent each year thereafter until 2020. This reduction will ensure that in 2020, power plant emissions from these nine states will be half of what they were in 2005, when RGGI was initiated.

The lower cap is also expected to generate an estimated \$350 million in additional revenue for the Commonwealth by 2020. These revenues will be invested primarily in programs to improve energy efficiency in Massachusetts' municipalities, businesses and residences, which will, in turn, reduce energy costs and lower carbon dioxide emissions.

Spotlight on Implementation Progress of Global Warming Solutions Act (GWSA) Policies

The Patrick Administration set out a number of policies to accomplish our aggressive greenhouse gas reduction goals. Progress on those policies is summarized below.

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<u>Strategy</u>	<u>Key Accomplishments and Highlights</u>
Capacity Building and Information Systems	<ul style="list-style-type: none"> • Developed new Clean Energy and Climate Performance Management System to track and document progress on GHG reduction strategies • Enacted regulations in 2008 and 2009 requiring annual GHG reporting by large facilities and retail electricity sellers • Created the Implementation Advisory Committee to foster inter-agency collaboration and stakeholder participation
Buildings, Energy Efficiency & Demand-Side Management	<ul style="list-style-type: none"> • Approved utility-funded energy efficiency plans for 2013-2015, which are expected to save a total of 3,700 GWh of electricity and 69 million therms over the three years • Over 130 municipalities have adopted the stretch energy code • Secured initial \$5M funding to plant 15,000 trees with anticipated lifetime savings of 1.8 MMTCO₂e from reduced energy use; full funding of program would more than triple these savings
Energy Generation and Distribution	<ul style="list-style-type: none"> • Lowered the Regional Greenhouse Gas Initiative (RGGI) regional CO₂ budget from 165 million short tons to 91 million short tons per year • Solar PV sector grew from 3 MW to over 347 MW⁴; wind energy sector grew from 3 MW to 103 MW; increased implementation of anaerobic digestion and small-scale hydro-electric project • Massachusetts' clean energy sector grew by 11.8% in 2012, higher than the overall MA economy, and employs nearly 80,000 people • Retirement of two major coal-fired power plants; third retirement expected soon • Funded several pilot programs in renewable thermal • Developed multi-year stakeholder process for identifying and designating MA Offshore Wind Energy Areas • Signed several long-term contracts for renewable energy • Launched a large hydro expansion initiative

⁴ As of January 1, 2014, 425 MW of solar have been installed

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<u>Strategy</u>	<u>Key Accomplishments and Highlights</u>
Transportation & Land Use	<ul style="list-style-type: none"> • Enacted new federal fuel economy standards for passenger vehicles and medium/heavy duty vehicles • Launched "Mode Shift" goal to triple the share of travel in MA by bicycling, public transit, and walking • Launched the Massachusetts Electric Vehicle Incentive Program in 2013 and awarded 132 EV charging stations to municipalities and others • Signed onto multi-state ZEV agreement • Committed to hiring a new Assistant Secretary for GreenDOT to oversee implementation • Legislation reforming state planning and zoning statutes pending before the legislature • MassWorks and other infrastructure programs incorporate Smart Growth criteria in funding decisions
Non-Energy Emissions	<ul style="list-style-type: none"> • Proposed new regulations on the emissions of SF6 from gas-insulated switchgear, which are currently being finalized • Detailed necessary actions to reduce plastics combustion the 2010-2020 Massachusetts Solid Waste Master Plan
Cross-Cutting Programs	<ul style="list-style-type: none"> • Incorporated new GHG emissions protocols into MEPA • 123 communities enrolled in the Green Communities Act program, and over \$20 million dollars invested in energy-saving projects • Leading by Example projects have reduced heating oil use at state facilities by over 50% in the past five years
Adaptation to Climate Change	<ul style="list-style-type: none"> • Outlined over 200 potential strategies to address the impacts of climate change in The Massachusetts Climate Change Adaptation Report • Convened the Adaptation Implementation Subcommittee in 2012 to prioritize and implement adaptation strategies outlined in the Adaptation report

Goal: Conserve open space and working landscapes

Action: Land protection program has conserved over 200K acres

The Massachusetts Department of Fish and Game (DFG) and its Division of Fisheries and Wildlife (MassWildlife) have protected over 200,000 acres of Massachusetts land after the agency acquired 3,525 acres of conservation land during fiscal year 2013. The agency now manages 200,442 acres statewide.

DFG and MassWildlife jointly administer the agency's [land protection program](#). Through Governor Patrick's leadership, the agency has invested more than \$64 million for land acquisition and conserved almost 40,000 acres. The agency's commitment to land conservation dates back to the early 1900s, but DFG managed just 3,375 acres prior to 1954. Acquisition from 1954 to approximately 1983 relied largely on sportsmen's license dollars. Since the passage of the first open space bond bill in 1983, approximately 30,000 acres are attributable to the Land Stamp funding collected from purchasers of fishing, hunting and trapping licenses.

DFG has acquired conservation properties throughout the state in reaching the 200,000 acre milestone. Highlights from recent years include the following projects:

- Paul C. Jones Working Forest, 3,486 acres in Leverett and Shutesbury
- Flagg Mountain Wildlife Management Area, 160 acres in Conway
- West Brookfield Wildlife Management Area, 320 acres in West Brookfield
- Squannacook River Wildlife Management Area, 39 acres in Townsend
- Halfway Pond Wildlife Management Area, 152 acres in Plymouth

Action: Wildlife and habitat restoration projects

\$600,000 in grants from the [Massachusetts Environmental Trust](#) (MET) for projects to protect and restore rivers, watersheds and wildlife across the Commonwealth.

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Since it was founded in 1988 as part of the Boston Harbor cleanup, MET has awarded more than \$19 million in grants to organizations statewide that provide a wide array of environmental services, from supporting water projects in communities to protecting coastal habitats.

The grants will help support twelve projects in **Barnstable, Boston, Fall River, Falmouth, Greenfield, Groton, Hanover, Newton, Oak Bluffs, Provincetown, Taunton, and Wellfleet**. Funding for this program comes from the sale of the state's three environmentally-themed specialty license plates: the Right Whale Tail, the Leaping Brook Trout and the Blackstone Valley Mill.

MET, established by the Massachusetts Legislature as a state trust in 1988, is governed by a nine-member board of trustees appointed by the EEA Secretary.

Action: Landscape Partnership Program

EEA announced a second round of grant awards through the Landscape Partnership Program, an initiative established in 2011 to permanently conserve Massachusetts' best remaining large tracts of undeveloped land. Funding for this program is made available through the 2008 Environmental Bond. Through this innovative program, the Patrick-Murray Administration is protecting large landscapes with high value for wildlife, drinking water protection, forestry, agriculture and tourism. The grants support partnership projects that will be completed over the next 16 months. These projects are located in the Western Massachusetts communities of **Leyden, Otis and Tyringham**.

To qualify for grants, projects must include at least 500 acres, allow public access and applicants must form land conservation partnerships. For example, a state agency can partner with a non-profit or municipality, a non-profit can partner with a state agency or municipality, or a municipality can partner with a state agency or non-profit. The projects receiving grants involve a spectrum of partners: three land trusts, a municipality, and two EEA agencies – Department of Agricultural Resources (DAR) and Department of Fish and Game (DFG).

Because these two projects offer unique opportunities to achieve landscape conservation goals, EEA is committing to funding these two grants in FY 14 once additional partnerships are established or more non-state funding is secured.

EEA designed the Landscape Partnership program to encourage non-governmental organizations, local communities and state environmental agencies to join forces on significant, complex projects that typically require the commitment of many partners, including multiple local organizations and a variety of state programs in order to succeed.

Goal: Manage fresh water and ocean resources in a sustainable manner

Action: Commonwealth signs pact with Cape Cod Commission to develop water quality management plan

The Patrick Administration, State Treasurer Steven Grossman's Office and the Cape Cod Commission signed a memorandum of understanding (MOU) that will initiate the development of a comprehensive water quality management plan for Cape Cod and provide \$3.35 million to accomplish the plan. The plan will address the high-levels of untreated effluent that is released in the Cape's sandy soil and from there into its ponds, streams and bays. Under the MOU, a draft plan will be submitted for public review within a year, and a final plan thereafter.

Cost estimates for implementing a solution to the nutrient problem range from \$3 to \$8 billion; the lower amount depends upon achieving a locally-driven regional approach built on communities partnering around shared watersheds. This funding will provide the Commission with the resources they need to develop the most cost-effective and environmentally sound approaches to managing water quality across the Cape.

The Commission will use \$3 million to develop a plan that will prioritize water resources, identifying the most impaired or endangered, and the actions needed locally to achieve water quality goals as quickly as possible. The plan will also limit the amount of infrastructure needed by prioritizing those areas requiring "shared" systems to restore water quality. It will also provide an opportunity to more fully evaluate decentralized and innovative approaches, and identify preferred solutions for nutrient management in nitrogen-sensitive watersheds. A portion of those funds have now been transferred to the Commission to begin work on the plan.

MassDEP will oversee the plan development, in conjunction with other officers of the Trust. Once the plan is finalized and certified by Governor Patrick, it will be submitted to the U.S. Environmental Protection Agency for approval.

Action: Sustainable Water Management Initiative (SWMI) grants

\$929,000 in grant funding has been approved to assist 11 communities with water conservation, demand management and other projects that will help to mitigate the ecological impacts of water withdrawals. The grants are part of the Sustainable Water Management Initiative (SWMI), which is an effort by the Massachusetts Office of Energy and Environmental Affairs (EEA) and its agencies to maintain healthy rivers and streams and improve degraded water resources over time.

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“Protecting our fresh water supports economic development in our cities and towns and preserves our natural resources for the next generation,” said Governor Deval Patrick.

The SWMI Grant Program will help water suppliers by providing grants for planning projects for specific watersheds, developing implementation projects to improve ecological conditions and managing projects aimed at reducing the demand for water within a municipality or watershed.

The grants will also support mitigation projects that will increase in-stream flow, improve the handling of wastewater and stormwater, upgrade ecosystem habitat, manage water demand and improve the water supply.

This first round of capital funding grants has been approved for the following communities: Amherst, Brockton, Dedham-Westwood Water District, Franklin, Halifax, Hopkinton, Kingston, Medway, Pembroke, Scituate, and Worcester.

Two of the proposed projects – in Brockton and Halifax – are connected to the same group of ponds, lakes and rivers, and will be implemented cooperatively to provide project cost savings. The grants for each project will help with water withdrawal issues being addressed in the Jones River, Silver Lake, Monponsett Ponds, Stump Brook, the North River and the Taunton River.

SWMI is intended to guide management of water in the Commonwealth so that there is enough for the many and sometimes competing long-term water needs of communities and aquatic ecosystems. The final SWMI framework is a plan that will, for the first time, put in motion Water Management Act regulations that implement “stream-flow” criteria, which are science-based standards to ensure that streams do not dry up.

Action: Updates to Massachusetts Ocean Plan

In January 2013, EEA initiated a review and update of the 2009 Massachusetts Ocean Management Plan. In May 2013, after review by the [Ocean Advisory Commission](#) and the [Ocean Science Advisory Council](#), two documents were released for public review and comment: a [Draft Review of the Massachusetts Ocean Management Plan](#) (which reports on progress made to date and opportunities for enhancement) and a [Draft Scope for Updates Proposed for the 2009 Massachusetts Ocean Management Plan](#). Four public meetings were held in June, and the 60-day public comment period closed on July 19. Technical working groups have been convened to review spatial data, science, and other information, and to identify and characterize important trends in ocean resources and uses. In the Fall of 2013, EEA will work with the Ocean Advisory Commission and the Ocean Science Advisory Council to finalize the review and scope for plan update and begin the initial work on plan revisions.

Action: New Bedford Marine Commerce Terminal

Ground was broken on the New Bedford Marine Commerce Terminal, the first terminal in the United States built to support offshore wind turbine deployment. The terminal project builds upon the Patrick Administration's continued commitment to investing in infrastructure and opportunity, to create jobs now and strengthen the Commonwealth for the next generation.

Following the completion of a competitive bidding process, MassCEC selected general contractor New Bedford-based Cashman-Weeks NB to construct the terminal. Work on the project began on April 22 and Cashman-Weeks has opened offices in New Bedford. The contractor has signed on to use supplies and services from 10 New Bedford businesses. The contractor is a joint venture made up of Cashman Dredging and Marine Contracting of Quincy, Mass. and Weeks Marine of New Jersey.

This multi-purpose facility will also be able to handle high-volume bulk and container shipping, as well as large specialty marine and industrial cargo. The first-of-its kind in North America, the terminal will be engineered to sustain mobile crane and storage loads that rival the highest capacity ports in the world. As part of construction, the project includes the dredging and removal of approximately 250,000 cubic yards of contaminated sediment.

Offshore wind represents the largest potential new energy source for Massachusetts and for much of the East Coast. By some estimates, Massachusetts' offshore wind resources could power close to half of the households in Massachusetts. The development of the offshore wind industry in Massachusetts can create a significant new industry in the Commonwealth to anchor the sector. The U.S. Department of Energy projects 43,000 clean energy jobs will be created in the offshore wind industry nationally by 2020.

The terminal, which will be located inside New Bedford Harbor and protected by the hurricane barrier, will be in close proximity to Cape Wind and the offshore wind planning areas along the East Coast that are under consideration for development. The federal government is leading an offshore wind permitting and leasing process in nine states, including Massachusetts, along the Atlantic Coast. That process is expected to lead to the construction of multiple projects, many of which could make use of the terminal, which has an estimated cost of \$100 million.

The Patrick Administration set the ambitious but achievable goal of reaching 2,000 megawatts of wind energy in Massachusetts by 2020, with most of that coming from offshore wind. This goal is part of Governor Patrick's nation-leading support for clean energy policies aimed at reducing reliance on foreign sources of energy, cutting energy costs and use, and reducing harmful greenhouse gas emissions.

Spotlight on Climate Change Adaptation

Governor Deval Patrick announced a \$50 million investment for a statewide plan to address the present and future impacts of climate change in Massachusetts. These investments will assess and address vulnerabilities in public health, transportation, energy and the Commonwealth's built environment.

"I believe that we have a generational responsibility to address the multiple threats of climate change," said Governor Patrick. "Massachusetts needs to be ready, and our plan will make sure that we are."

The plan includes a \$40 million municipal resilience grant program, to be administered by the Massachusetts Department of Energy Resources (DOER), that will enable cities and towns to harden energy services at critical sites using clean energy technology. The grants will be funded through Alternative Compliance Payments (ACP), which are paid by electric retail suppliers if they have insufficient Renewable or Alternative Energy Certificates to meet their compliance obligations under the Renewable and Alternative Portfolio Standard programs.

The Department of Public Utilities (DPU) will work with utilities to determine ways to accelerate storm hardening and deploy micro-grids and resiliency projects for transmission and distribution. In addition, the Executive Office of Energy and Environmental Affairs (EEA) will establish an inventory of generation facilities vulnerability and preparedness plans.

"Recent storms and related outages serve as a reminder that it is critical we secure our energy grid to endure more extreme weather patterns," said Secretary of EEA Rick Sullivan. "I will work with my team, my colleagues across the Administration and stakeholders to act quickly and responsibly to harden our energy sources."

The Governor's plan also calls for the Massachusetts Department of Transportation (MassDOT) to conduct a statewide vulnerability assessment for all facilities and adopt Climate Adaptation Plans by 2015. MassDOT Secretary Richard A. Davey will establish an internal working group to advise on next steps and work with stakeholders. The Department of Conservation and Recreation (DCR), which also owns and operates a number of historic parkways and roadways that are particularly vulnerable to flooding and sea level rise, will conduct an assessment to determine and quantify the levels of exposure and susceptibility that DCR's parkways and roadways face.

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"The MassDOT team is committed to undertaking a thorough assessment of the Commonwealth's transportation network to identify vulnerabilities," said Secretary Davey. "Through our planning and action we will be laying the groundwork necessary to react to climate change and its impact on our rails, ports, roads and bridges."

Additionally, to decrease long-term risk, smart growth and sustainable development planning will include Massachusetts Emergency Management Agency (MEMA) planners to advise on hazards and resiliency, and MEMA will share hazard data for use in building assessments.

As a state with a long, densely populated coastline, Massachusetts is particularly vulnerable to sea level rise. The Patrick Administration is investing \$10 million in critical coastal infrastructure and dam repair, including \$1 million in municipal grants offered by the Office of Coastal Zone Management (CZM) to reduce or eliminate risk associated with coastal storms and sea level rise. As natural solutions have often proved to be the best defense against nature, CZM will implement a \$1 million program for Green Infrastructure for Coastal Resilience pilot projects.

Evidence also suggests that public health impacts of climate change will be felt most directly and severely at the local level. To help local boards of health in preparing for the impacts of climate change, the Governor announced that the Department of Public Health (DPH) will develop additional resources at the state level to identify areas of special concern, draft model strategies to address these and enhance education and training. EEA and DPH will partner to conduct analysis on monitoring vector-borne disease in both oysters and mosquitoes. In addition, the Department of Environmental Protection (DEP) will work with communities to assess the vulnerability of infrastructure associated with potable water, which is critical to public health and safety.

"The impact of climate change on the public health is increasingly apparent," said DPH Commissioner Cheryl Bartlett, RN. "We thank Governor Patrick for his leadership on this issue and look forward to working with our state and local partners to implement strategies to reduce the health effects of climate change in many areas including mosquito-borne illness and vibrio."

The effects of climate change are already evident here in Massachusetts. Since 2010 alone, the Commonwealth has endured five major storms, including Superstorm Sandy. There has also been an increase in vector-borne diseases; in the summer of 2012, Massachusetts saw a significant rise in Eastern Equine Encephalitis (EEE) that led to aerial spraying, and in 2013 oyster beds had to be closed for the first time in Massachusetts history because of vibrio parahaemolyticus. In order to help state agencies and municipalities better understand these climate change impacts, EEA will partner with UMass Amherst's


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Northeast Climate Science Center to appoint a state climatologist. To deliver useful information to residents, the Commonwealth will work to aggregate climate preparedness resources into a single online portal for easy public access.








In addition to the \$40 million in ACP funds and \$10 million in capital funds for coastal projects, the Governor will seek \$2 million in the Fiscal Year 2015 budget to accomplish the remaining interagency efforts.




Following is a dashboard showing performance information for resource protection measures

Dashboard of Key Measures: Resource Protection

GOAL	MEASURE	CURRENT PERIOD	PRIOR PERIOD	TREND	TARGET	STATUS	COMMENTS
Reduce greenhouse gas emissions 25% below 1990 levels by 2020, and 80% by 2050	# of million metric tons CO ₂ – equivalent reduction from 1990 levels by sector (Buildings, Electricity Supply, Transportation, Non-Energy)	85.03 million metric tons	83.32 million metric tons	Stable	71 million metric tons for 1/1/2020-12/31/2020, which will be a 25% reduction from the 94 million metric tons in 1990		CY10 vs. CY09 The MA Climate Plan Performance Management System (CCPMS) was released on EEA website in December 2013 to provide detailed progress to the public. The first year after the Clean Energy and Climate Plan was released was 2011, and 2009 is last year of emissions available, so numeric status not yet available, but many qualitative actions indicate good progress.
	Progress in implementing GWSA policies	See previous spotlight section					
Conserve open space and working landscapes for current and future generations to provide clean air, clean water, local agricultural assets, and wildlife habitat	# acres protected	29,752	34,588	Stable	Conserve and protect the best available additional areas each year with limited resources	n/a	FY13 vs. FY12 In October 2013 hit milestone of 200,000 acres protected. EEA and its agencies are always striving to protect the most important land available with their finite resources. Each conservation effort follows a unique timeline, sometimes requiring years to complete.
	# acres protected via Agriculture Preservation Restriction (APR)	1,696	1,684	Stable		n/a	
	# acres of Prime Agricultural Soils protected	8,822	9,003	Stable		n/a	
	# acres water supply protected	762	1,812	Stable		n/a	
	# acres Prime Forest Soils protected	22,970	27,071	Stable		n/a	
	# acres of BioMap2 Core Habitat and Critical Natural Landscape protected	17,676	22,545	Stable		n/a	

Dashboard of Key Measures: Resource Protection (Continued)

GOAL	MEASURE	CURRENT PERIOD	PRIOR PERIOD	TREND	TARGET	STATUS	COMMENTS
Manage fresh water and ocean resources in a sustainable manner	Statewide average residential water use (gallons per person per day)	59	60	Stable	65		CY12 vs. CY11 Statewide average is below target, even though only 60% of public water supplies have standard in permit
	% of assessed rivers that are determined to be impaired (as defined by the Clean Water Act) every other year	53.8%	53.8%	Stable	A net reduction every two years		Cumulative as of 2012 vs. Cumulative as of 2010 <ul style="list-style-type: none"> Data indicates a slight improvement in estuary quality. Waters with the biggest problems are targeted for assessment, and therefore this data is not indicative of all state waters.
	% of assessed lakes that are determined to be impaired (as defined by the Clean Water Act) every other year	58.1%	56.9%	Stable			
	% of assessed estuaries that are determined to be impaired (as defined by the Clean Water Act) every other year	87.3%	90.3%	Stable			
	# wetland acres restored	91	143	Stable	75		CY12 vs. CY11
	# of river miles restored annually	39	5	Improving	25		CY12 vs. CY11 Net increase in upstream connectivity.
	Economic value and total production capacity of offshore renewable energy in state and adjacent federal ocean waters	0 MW	0 MW	Stable	1,500 MW by 2020		FY13 vs. FY12 Construction of the 468 MW Cape Wind project is expected to begin in 2014, if final financing is secured. Power purchase agreements are currently in place for 78 percent of Cape Wind's generation capacity. Completed multi-year stakeholder process to identify new offshore Wind Energy Areas in federal waters south of Martha's Vineyard, opened a leading Wind Technology Testing Center in Charlestown, and the development of the New Bedford Marine Commerce Terminal, a first-in-the-nation facility designed to deploy offshore wind projects along the Atlantic Coast.

STATUS LEGEND		
On Target	> = Target	
Close-to-Target	80% to 99% of Target	
Off Target	< 80% Target	
Not Applicable (N/A)		